Literature Review:

An exploration of the benefits of the Physicians Associate role in health care settings in the UK

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1. Introduction

This paper provides results of a rapid review of the literature in relation to the benefits of physician associates (PAs) in health care settings in the UK. The objective is to appraise and synthesise available literature on the beneficial impact of PAs on services; namely patient experience and outcomes, workforce structures and costs. The aim is to support health care employers within the Humber, Coast and Vale region to make evidence-informed decisions around the role.

It begins by defining the background to the PA role and purpose of this review. Findings are then presented followed by a tentative conclusion. This is work in progress that will be continually reviewed and shared with the Faculty of Advanced Practice and Physicians Associates in Humber, Coast and Vale.

2. Background

In recent years, the National Health Service (NHS) in England has had to rethink its workforce structures and care models in light of increasing demand for services set against a backdrop of rising costs and an ageing population. In addition, experienced General Practitioners and nurses are leaving the workforce in significant numbers, often due to retirement, which is leading to a growing skills gap. These issues have been further compounded by the COVID19 pandemic and its potential future health, economic and societal impacts.

One solution has been to train and employ physician associates (PAs). PAs are trained in the medical model and can assess, diagnose and commence treatment under the supervision of a physician. In the UK, they are typically recruited from biosciences backgrounds. PAs undertake a two-year, full-time education and training programme that ends with a single national examination. The qualification is awarded as a postgraduate diploma or offered as a Master's option at some universities involving submission of a thesis. There are currently more than 1300 PAs practising in the UK across primary care and a wide range of specialities in secondary care.

3. Purpose

The PA is a relatively new role in England; the first PAs were first introduced in the UK in 2003) and to date there is minimal evidence as to their effectiveness in practice. Concerns amongst staff and the public about the role of PAs include:

- Lack of professional regulation of the role
- Lack of clarity among staff, patients and the public about PAs and their roles
- Concerns about the impact of PAs on doctors' training

- Lack of clarity around supervision
- Suitability of PAs to different care settings
- A media viewpoint that PAs as a quick and cheap substitute for fully qualified doctors

This review therefore considers research that has explored the benefits of the PA role in England and the devolved nations since 2003. The findings are broken down by primary, secondary and mental health care; then further into patient, workforce and cost impact. References are embedded within the document for ease of access.

4. Benefits of the role

4.1 Primary Care

In October 2017, the Royal College of General Practitioners (RCGP) published a position paper on PAs working in general practice. The RCGP (2017) paper describes the PA as a 'complementary' rather than substitute role for GPs that can help expand capacity in response to evolving healthcare needs in an increasing and ageing population.

Patient impact

A systematic review by Halter et al. (2013) (49 studies of which 46 were from the USA and of moderate quality) found approximately half of PAs were reported to work in primary care. The majority of their workload was the management of younger patients with acute illness. Acceptability by patients in this cohort was consistently found to be high. In another study Halter et. al. 2017 also found that, overall, patients accepted a PA in place of a GP for non-complex consultations.

In terms of patient safety, in an observational research study by De Lusignan et al. (2016) experienced GPs could not differentiate between PA and GP consultations; the observing GPs deemed the PAs to provide safe and effective consultations. However GP consultations were rated by participants as more competent overall. Farmer et al. (2009) echoed that PA's practice was found to be safe in their mixed-methods study in Scotland; patients who were interviewed as part of this study were found to be satisfied with their care by PAs and the vast majority were happy to see PAs again for similar problems. All researchers emphasised the fact that patient safety is dependent on effective medical supervision.

Feedback from GPs and practice managers has also been shown to be positive, specifically when comparing between PAs and Nurse Practitioners (NPs), with PAs being seen as having a wider range of competencies, requiring less supervision and being more willing to make their own decisions compared to NPs (Drennan et. al. 2017).

Workforce impact

Parle and Ennis (2015) describe PA's scope of practice as being defined by their supervising doctor and thus variable depending on local need. Farmer et al. (2009) found that team members working with PAs saw them as bringing additional complementary skills and attitudes to teams. Correspondingly in the comparative study by Drennan et. al. (2015), PAs were found to make more thorough and higher quality records than GPs. On average, the PAs's consultation times were longer than with GPs (15/20 mins instead of 10 mins) and gave more detailed consultation records. PAs in this study reported that they felt most

effective when there was a clear gap in a team that they could fill. This was echoed by Roberts et al. (2019) who argue that employers must have effective systems and processes in place to support the integration of the role. The findings suggest PAs should be part of a wider multidisciplinary team with effective medical supervision; a strong and trusting relationship was also found to be crucial between PAs and their supervising doctor.

Cost impact

Physician Associates have been shown to be potentially cost-effective in primary care by Drennan et. al. (2015); no significant differences were found between PAs and GPs in the rate of diagnostic tests ordered, secondary care referrals or prescriptions issued for same day appointments. Although shorter, the cost of a GP consultation exceeded that of a PA by approximately £6.22. The researchers were keen to emphasise however that their economic analysis was limited to consultation times only, rather than the total cost of treatment. Also a lack of data on time spent by GPs on supervising PAs and signing their prescriptions indicate that the real costs of PAs were potentially undervalued. The researchers suggest that employment of PAs to consult patients, aligned with their competencies, has the potential to liberate GP time to concentrate on more complex patients.

In a study by Farmer et al. (2009), teams noted that PAs (at band 7) brought a level of skills and attitudes that overlapped with other roles; particularly nursing and medical roles. It was found that PAs would result in savings of at least £43,000 if they worked 'like' a generalist medic (specialist trainee, staff grade or GP in training).

Discussion

The studies all produced positive results in terms of patient, workforce and economic impact. However all studies described here are small scale, so results are not generalizable. The methods also have the potential for bias; for instance none were randomised controlled trials and some studies involved PAs trained or working in the USA. As highlighted by Drennan et al. (2015) the economic analysis described in some studies was also limited; so the total cost of treatment and support for PAs was not calculated.

Certainly all authors highlighted a significant issue for policy makers in regards to the lack of PAs 'jurisdictional authority', in particular their inability to prescribe and order X-rays. This is described as having a negative impact on cost-effectiveness, workforce impact and patient care delivery; issues which should resolve once statutory regulation and prescribing rights are introduced by the UK government in conjunction with the General Medical Council (GMC). Authors of the reviewed studies comment that having effective supervision structures in place can help to mitigate these issues.

In all of the studies, the researchers were keen to emphasise that PAs should not be regarded as a direct substitute for other roles such as a nurse or a doctor. Indeed patients were described as being comfortable having an appointment with a PA for simple issues such as minor ailments or management of a single long-term condition, but not for complex multiple long-term conditions or for receiving bad news such as a cancer diagnosis. All of the authors describe the importance of fully preparing for and explaining the role to staff and patients in order to ensure a smooth transition into the health care environment.

4.2 Secondary Care and Mental Health Care

The Faculty of Physicians Associates explains how PAs can perform a multitude of functions within the hospital setting, irrespective of the specialty in which they work.

Patient impact

A mixed-methods study by Halter et al. (2020) found that PAs in three emergency departments in England treated patients with a broad range of conditions safely, and at a comparable level to foundation year two doctors-in-training (FY2s). The researchers found that PAs were seen as providing more consistent, long-term care than FY2s whose rotations in ED lasted only 4 months.

Drennan et al. (2019a) conducted a multiphase study that explored the contribution of PAs in acute hospital settings. In this study, the medical/surgical teams largely employed PAs on wards where they provided continuity. Their long-term deployment in these areas was found to aid communication with both staff and patients. Their knowledge of clinical and hospital policies was also viewed as valuable to junior doctors on rotation. PAs were found to work safely as part of the medical/surgical team. In the emergency department, PAs attended patients under the supervision of a consultant; when compared with junior doctors, the patient outcomes were the same. PAs were also reported to help make the patient journey to discharge smoother. However, the researchers concluded that PAs ability to prescribe and order imaging would improve their utilisation.

Correspondingly the systematic review by Drennan et al. (2019b) explored the impact of PAs in acute internal medicine, emergency medicine, trauma and orthopaedics and mental health. They found that PAs can make a positive contribution to patients in terms of reduced waiting times in the emergency, operative and postoperative phases of care, reduced postoperative complications and either no difference or a reduction in mortality when compared to other roles of a similar level. The studies reviewed also produced generally high patient satisfaction.

Taylor et al. (2019) found similar results in a qualitative study conducted with fifteen patients receiving care from PAs working across five acute hospital services in England. Participants were described as feeling trust and confidence in their relationship with PAs and experiencing emotional care and support for their conditions. Whilst Taylor et al. (2019) found positive patient impacts, they emphasised the need to inform patients and the public about the role so as not to cause feelings of mistrust or confusion.

A later study by Taylor et al. (2020) looked at how best to educate the patients about the PA role; they suggest the preferred method of introducing PAs was via a small information leaflet and a verbal explanation of the role to patients by the PA themselves.

Workforce impact

The review by Drennan et al. (2019a) found high levels of staff acceptability of the PA role in acute, ED, trauma and orthopaedics and mental health without negatively impacting on existing professions. In mental health, the one study's qualitative evidence suggests this is achieved through adequate support, team cohesion and improvements in working as a system.

The need to provide a supportive work environment to enable PAs to make positive workforce impacts is echoed by Brown et al. (2020); they describe how continuity and relevant clinical exposure can support integration into the workforce. Similarly negative attitudes from staff towards PAs, inappropriate workloads and lack of PA role models can result in harm to their identity formation. This in turn was suggested by Brown et al. (2020) to negatively affect their impact in the workplace. Ritsema and Roberts (2016) echoed this and found PAs were least satisfied when they were unable to completely apply their training; the cause was perceived as being due to the newness of the role, absence of prescriptive rights and a deficiency in the understanding of the role by employers.

A national survey of doctors' experiences of working with PAs in a wide range of specialties was also conducted by Williams and Ritsema (2014). As demonstrated in previous studies, doctors were found to be content overall with this new role. Doctors were however most concerned that they could not use PAs to their full potential due to the aforementioned legal limitations in addition to variation by employers in support provided and the application of the Competence and Curriculum Framework for the PA. The researchers also underlined that some doctors believed patients may not be able to distinguish PAs from doctors; an issue perceived as either as positive, because it reflected PA competency or negative as it reflected negatively on the PA and their medical team.

Cost impact

PAs have the potential to produce cost savings in secondary care. However the evidence is mixed, sometimes contradictory and scant. In the systematic review by Drennan et al. (2019), researchers concluded that lower costs were reported in acute medicine studies where physicians were replaced by PAs; importantly there were no differences in clinical outcomes or in length of stay. In other studies within the same review, there were little to no differences in cost or it was difficult to interpret due to confounding factors such as differences in staffing levels overall when comparing results. The authors therefore called for more research in this area.

Discussion

PAs have made positive impacts in secondary and mental health care. They are valued members of the team that can relieve staffing pressures and improve the efficiency of care delivery. However research in this area as scant and lacking in scientific robustness. In particular, there was very limited evidence in mental health and no literature that covered specialty areas, for instance paediatrics or elderly care. Some data was also obtained from Canada and the USA owing to the dearth of UK evidence. This makes it difficult to draw strong conclusions about the benefits of PAs across secondary care in the UK more broadly.

Similarly whilst some evidence shows that PAs can result in cost savings, there has been no robust, positivist research conducted with clear quantitative evidence of cost vs benefits; in these studies PAs worked as additions as well as replacements of other roles in multifaceted systems which created challenges in identifying cause and effect.

A recurring theme however is the need for regulation and a work environment with effective support mechanisms. As with primary care, secondary and mental health care employers must prepare for PAs; this is important in terms of robust governance structures and clear communication strategies to ensure that PAs can work to their full potential and staff and patients understand their role within the team.

5. Recommendations

The following recommendations are suggested for researchers and policy makers in the HCV region:

- **Conduct further research**
  Given the paucity of UK-based evidence, future high-quality research that utilises these findings and further evaluates their effectiveness is warranted; particularly around patient's experiences of PAs, the longer-term outcomes of PA-led care, the cost-effectiveness of the PA role compared to other roles and evaluation of the role in a variety of settings.

- **Educate employers, staff and the public on the role**
  In order to enable PAs to work to their full potential, employers, staff and patients need to have a greater understanding of the role in terms of its limits and abilities. Policy makers should therefore seek to promote facts about the role in addition to providing supportive infrastructures (i.e. effective supervision, role models etc.).

- **Continue to lobby government on the required structural changes**
  Whilst the legislation around PA prescribing and regulation has been delayed inevitably due to COVID19, it is causing a barrier to the effectiveness of the PA role. Senior policy makers need to continue to work with the GMC and the government on the required changes to enable this role to better support their wider multidisciplinary teams.

6. Conclusion

In conclusion there are potential patient, workforce and cost benefits of PAs in primary, secondary and mental health care. PAs are shown to provide more detailed consultations than GPs and act as a constant pillar of support for patients and staff on rotation within the hospital environment. They are potentially more cost-effective than GPs for same day, non-complex appointments and may be less costly than physicians in an acute setting. Importantly they are safe, viewed positively by patients with non-complex issues and valued by their wider multidisciplinary teams for their knowledge and skillsets.

However more high quality research evidence is needed; the literature is sparse and of variable quality. Most studies discussed here have a small sample size and there is a distinct lack of randomised controlled trials and control groups.

There is also work to be done at a local level to enable a greater understanding of the role by employers and the public. Employers need to educate and prepare staff and patients on the role. Without this, PAs will not be utilised effectively which can result in negative impacts on their identity and misunderstandings for the wider workforce and patients.

Finally, the UK government also need to act urgently in relation to the pending regulatory and prescribing rights for PAs in order for them to realise their full potential.

The table in appendix 1 summarises physician associates in relation to their patient, workforce and cost benefits, alongside enablers and barriers.

Appendix 1 Summary of PA benefits

Sector	Patient benefits	Workforce benefits	Cost benefits	Barriers	Enablers
Primary Care	No major differences seen in rates of same day/urgent appointments, re-consultation, referral to secondary care, prescribing, ordering investigations or interventions (Drennan et al. 2015). Acceptability to patients found to be consistently high (Halter et al, 2013)	PAs made more detailed consultation records and consultation times with PAs were longer than GPs (15 or 20 mins instead of 10 mins) (Drennan et al. 2015) PA consultations were competent and safe but GP consultations rated more competent (De Lusignan et al, 2016). Doctors supervising PAs (surveyed in 2012) mostly satisfied with PAs (Drennan et al, 2015) PAs were satisfied with their work when within a distinct role and had trusting relationships with doctors in their teams (Ritsema and Roberts, 2016).	Although shorter, the cost of a GP consultation exceeded that of a PA by £6.22* (Drennan et al, 2015) *Economic analysis is limited to consultation times only, rather than total cost of treatment. Lack of data on time spent by GPs on supervising PAs and signing their prescriptions means that the real costs of PAs is probably underestimated (Drennan et al. 2015)	Confusing and varying role expectations from wider teams and patients (Williams and Ritsema, 2014). Unregulated status preventing PAs from carrying out full range of duties, including prescribing and ordering X-Rays (Drennan et al 2011; Williams and Ritsema 2014; Ritsema and Roberts, 2016). Diversity of PA training and support from employers (Williams and Ritsema, 2014).	PAs possess a wide range of diagnostic and therapeutic skills* i.e. same day and urgent consultations, examinations, ordering tests, test results reviews, diagnosis, prescribing, counselling, prevention, education, research, administrative services (Drennan et al. 2015) and supporting GPs in the management of complex caseloads (Parle and Ennis, 2015) *PAs autonomy varies considerably depending on setting, experience, competence and local requirements
Secondary Care/Mental	PAs can treat patients with a broad range of	PAs receive high levels of staff acceptability in	Lower costs were reported in acute	Patients may not be able to distinguish PAs from	PA's long-term deployment in

Health	conditions safely, and at a comparable level to FY2s providing more consistent care (Halter et al. 2020) When compared with junior doctors, the patient outcomes were the same. PAs were also reported to help make the patient journey to discharge smoother. (Drennan et al. 2019a) PAs reduced waiting times, postoperative complications and either no difference or a reduction in mortality when compared to other roles of a similar level (Drennan et al. 2019b) PAs have high levels of patient satisfaction (Taylor et al. 2019).	acute, ED, trauma and orthopaedics and mental health without negatively impacting on existing professions. (Drennan et al. 2019a)	medicine studies where physicians were replaced by PAs; importantly there were no differences in clinical outcomes or in length of stay. (Drennan et al. 2019),	doctors; an issue perceived as either as positive, because it reflected PA competency or negative as it reflected negatively on the PA and their medical team (Williams and Ritsema, 2014). Negative attitudes from staff towards PAs, inappropriate workloads and lack of PA role models can result in harm to their identity formation. This in turn was suggested by Brown et al. (2020) to negatively affect PA's impact in the workplace.	medical/surgical areas was found to aid communication with both staff and patients. Their knowledge of clinical and hospital policies was also viewed as valuable to junior doctors on rotation (Drennan et al., 2019a). Employers need to provide a supportive work environment and relevant clinical exposure to enable PAs to make positive workforce impacts (Brown et al. 2020; Ritsema and Roberts 2016).